CLAIMS

WHAT IS CLAIMED IS:

- 1 1. A food grade colored fluid comprising a food grade dye, glycerine, at least about 25 wt.% 1,2-propanediol, and optionally water; 2 wherein the 1,2-propanediol, glycerine and any optional water make up 3 at least about 90 wt.% of the colored fluid, and any water present makes up no more 4 than about 35 wt.% of the colored fluid. 5 The colored fluid of Claim 1 comprising at least about 2 wt.% 2. 1 glycerine. 2 3. The colored fluid of Claim 1 comprising at least about 70 wt.% 1 1,2-propanediol. 2 4. The colored fluid of Claim 1, wherein any water present makes 1 up no more than about 20 wt.% of the colored fluid. 2
- The colored fluid of Claim 1, wherein any water present makes up no more than about 1 wt.% of the colored fluid.
- 1 6. The colored fluid of Claim 1 comprising about 0.1 to 10 wt.% of the food grade dye.
- 7. The colored fluid of Claim 1, wherein the food grade dye comprises FD&C Red #3, FD&C Red #40, FD&C Yellow #5, FD&C Yellow #6, FD&C Blue #1 or a mixture thereof.
- 1 8. The colored fluid of Claim 1, wherein the food grade dye comprises a natural dye.

- 1 9. The colored fluid of Claim 1, wherein the colored fluid has a viscosity of about 8 to 14 cps at 60°C.
- 1 10. The colored fluid of Claim 1, wherein the colored fluid has a surface tension of about 20 to 60 dynes per cm at 25°C.
- 1 11. The colored fluid of Claim 1, wherein the colored fluid has a silt density index of at least 0.5.
- 1 12. The colored fluid of Claim 1, wherein the food grade dye has 2 an inorganic salt content of no more than about 0.5 wt.%.
- 1 13. The colored fluid of Claim 1, wherein the food grade dye has a chloride ion content of no more than about 0.5 wt.% and a sulfate ion content of no more than about 0.5 wt.%.
- 1 14. The colored fluid of Claim 1, wherein the colored fluid has a
 2 Brookfield viscosity at 60°C that changes by no more than about 2 cps over a shear
 3 rate range from 10 to 45 rpm.
- 1 15. A food grade colored fluid comprising about 0.1 to 10 wt.%
 2 food grade dye, about 25 to 95 wt.% 1,2-propanediol, about 1 to 50 wt.% glycerine,
 3 and no more than about 35 wt.% water; wherein the colored fluid has a viscosity of
 4 about 8 to 14 cps at 60 °C.
- 1 16. A food grade colored fluid comprising a food grade dye, a food grade glycol, optionally glycerine and optionally water; wherein the food grade glycol and any optional glycerine and water make up at least about 90 wt.% of the colored fluid, and any water present makes up no more than about 35 wt.% of the colored fluid; and further wherein the colored fluid has a Brookfield viscosity at 60°C that changes by no more than 2 cps over a shear rate range from about 10 to 45 rpm.

- 1 The colored fluid of Claim 16, wherein the colored fluid has a surface tension of about 35 to 50 dynes per cm at 25°C.
- 1 18. The colored fluid of Claim 16 comprising at least about 25 wt.% 1,2-propanediol.
- 1 19. The colored fluid of Claim 16, the colored fluid having a viscosity of about 35 to 65 cps at 25°C.
- 1 20. A food grade colored fluid comprising a food grade dye and at 2 least about 25 wt.% 1,2-propanediol, wherein the food grade dye has an inorganic salt 3 content of no more than about 0.5 wt.%.
- 1 21. The colored fluid of Claim 20 comprising at least about 70 wt.% 1,2-propanediol, glycerine or a mixture thereof.
- The colored fluid of Claim 20, wherein the colored fluid has a viscosity of about 35 to 65 cps at 25°C.
- 1 23. A food grade colored fluid comprising a food grade dye and at 2 least about 70 wt.% 1,2-propanediol, glycerine or a mixture thereof;
- wherein the colored fluid has a viscosity of about 35 to 65 cps at 25°C.
- 1 24. The colored fluid of Claim 23 comprising at least about 40 wt.% 1,2-propanediol.
- 1 25. The colored fluid of Claim 23 comprising at least about 85 wt.% 1,2-propanediol.
- 1 26. The colored fluid of Claim 23 comprising about 2 to 10 wt.% 2 glycerine.

27. The colored fluid of Claim 23 comprising no more than about 1 2 30 to 45 wt.% glycerine. 28. The colored fluid of Claim 23 further comprising isopropanol, 1 ethanol or a mixture thereof. 2 29. 1 The colored fluid of Claim 23 further comprising methylparaben, propylparaben or a mixture thereof. 2 30. The colored fluid of Claim 23 comprising no more than about 1 2 20 wt.% water. 31. The colored fluid of Claim 23 comprising no more than about 1 1 wt.% water. 2 32. The colored fluid of Claim 23, wherein the food grade dye 1 comprises FD&C Red #3, FD&C Red #40, FD&C Yellow #5, FD&C Yellow #6, 2 FD&C Blue #1 or a mixture thereof. 3 33. The colored fluid of Claim 23, wherein the colored fluid has a 1 surface tension of about 35 to 50 dynes per cm at 25°C. 2 34. The colored fluid of Claim 23, wherein the food grade dye has 3 an inorganic salt content of no more than about 0.5 wt.%. 4 35. The colored fluid of Claim 23, wherein the food grade dye has 1 a chloride ion content of no more than about 0.5 wt.%. 2

The colored fluid of Claim 23, wherein the food grade dye has

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a sulfate ion content of no more than about 0.5 wt.%.

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- The colored fluid of Claim 36, wherein the food grade dye has a chloride content (as sodium chloride) of no more than about 1000 ppm and a sulfate content (as sodium sulfate) of no more than about 1000 ppm.

 The colored fluid of Claim 23, wherein the colored fluid has a silt density index of at least about 0.5.
- 1 39. The colored fluid of Claim 23, wherein the food grade dye comprises a natural dye.
- 1 40. The colored fluid of Claim 39, wherein the natural dye 2 comprises a turmeric oleoresin, a cochineal extract, gardenia yellow, gardenia blue, 3 beet powder or a mixture thereof.
- 1 41. The colored fluid of Claim 23, wherein the colored fluid has a viscosity of about 8 to 14 cps at 60°C.
- 1 42. A method of applying an edible colorant to a surface of an 2 edible substrate, comprising ink jet printing the food grade colored fluid of Claim 1 3 directly onto the surface.
- 1 43. The method of Claim 42, wherein the surface is a porous 2 surface.
- 1 44. The method of Claim 42, wherein the food grade colored fluid 2 has a viscosity of about 8 to 14 cps at a temperature between about 20 and 75°C.
- 1 45. The method of Claim 42, wherein the food grade colored fluid 2 has a viscosity of about 8 to 14 cps at 60°C.
- 1 46. The method of Claim 42, wherein the ink jet printing takes 2 place at a jetting temperature of about 25 to 75°C.

- 47. 1 The method of Claim 42, wherein the ink jet printing takes 2 place at a jetting temperature of about 50 to about 70°C.
- 48. 1 The method of Claim 42, wherein the ink jet printing takes 2 place using at least one piezoelectric print head.
- 49. A method of applying an edible colorant to a surface of an 1 edible substrate, the method comprising ink jet printing the food grade colored fluid 2 3 of Claim 16 directly onto the surface.
- 50. A method of applying an edible colorant to a surface of an 1 2 edible substrate, the method comprising ink jet printing the food grade colored fluid of Claim 20 directly onto the surface. 3
- 51. A method of applying an edible colorant to a surface of an 1 2 edible substrate, the method comprising ink jet printing the food grade colored fluid of Claim 23 directly onto the surface. 3
- 52. An edible substrate having the food grade colored fluid of 1 Claim 1 applied to at least one surface thereof. 2
- 53. The edible substrate of Claim 52, wherein the at least one 2 surface is a porous surface.
- 54. The edible substrate of Claim 52, wherein the edible substrate 1 2 is selected from the group consisting of crackers, chewing gum, biscuits, cereal, taco shells, granola bars, rice cakes, cookies, pie crusts, waffles, cakes, marshmallows, 3
- candies, pasta and bread products.

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